

WHAT IS CLAIMED IS:

1. An audio signal encoding apparatus comprising:
 - means for adding a first audio signal and a second audio signal
 - 5 into an addition-result signal;
 - means for subtracting the first audio signal from the second audio signal, and generating a subtraction-result signal;
 - means responsive to the addition-result signal for generating a first difference signal representing a difference in the addition-result signal;
 - 10 means responsive to the subtraction-result signal for generating a second difference signal representing a difference in the subtraction-result signal;
 - a plurality of first predictors having different prediction characteristics respectively and being responsive to the first difference signal for generating first different prediction signals for the first difference signal, respectively;
 - 15 a plurality of first subtracters for generating first prediction-error signals representing differences between the first difference signal and the first different prediction signals, respectively;
 - 20 means for selecting a first minimum prediction-error signal representative of a smallest difference from among the first prediction-error signals;
 - a plurality of second predictors having different prediction characteristics respectively and being responsive to the second difference signal for generating second different prediction signals
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for the second difference signal, respectively;

a plurality of second subtractors for generating second prediction-error signals representing differences between the second difference signal and the second different prediction

5 signals, respectively; and

means for selecting a second minimum prediction-error signal representative of a smallest difference from among the second prediction-error signals.

10 2. An audio signal encoding apparatus as recited in claim 1, further comprising means for generating a variable-rate bit stream in response to the first minimum prediction-error signal and the second minimum prediction-error signal.

15 3. An audio signal decoding apparatus for processing a first minimum prediction-error signal and a second minimum prediction-error signal which are generated by an audio signal encoding apparatus comprising means for adding a first audio signal and a second audio signal into an addition-result signal; means for
20 subtracting the first audio signal from the second audio signal, and generating a subtraction-result signal; means responsive to the addition-result signal for generating a first difference signal representing a difference in the addition-result signal; means responsive to the subtraction-result signal for generating a second difference signal representing a difference in the subtraction-result signal; a plurality of first predictors having different prediction
25 signals; and means for generating a second audio signal by adding the first difference signal and the second difference signal.

characteristics respectively and being responsive to the first difference signal for generating first different prediction signals for the first difference signal, respectively; a plurality of first subtracters for generating first prediction-error signals

5 representing differences between the first difference signal and the first different prediction signals, respectively; means for selecting a first minimum prediction-error signal representative of a smallest difference from among the first prediction-error signals; a plurality of second predictors having different prediction characteristics

10 respectively and being responsive to the second difference signal for generating second different prediction signals for the second difference signal, respectively; a plurality of second subtracters for generating second prediction-error signals representing differences between the second difference signal and the second different prediction signals, respectively; and means for selecting a second minimum prediction-error signal representative of a smallest difference from among the second prediction-error signals; the audio signal decoding apparatus comprising:

means for recovering the addition-result signal from the first minimum prediction-error signal;

means for recovering the subtraction-result signal from the second minimum prediction-error signal; and

means for recovering the first audio signal and the second audio signal from the recovered addition-result signal and the recovered subtraction-result signal.

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4. A method comprising the steps of:
 - adding a first audio signal and a second audio signal into an addition-result signal;
 - subtracting the first audio signal from the second audio signal,
- 5 and generating a subtraction-result signal;
 - generating a first difference signal representing a difference in the addition-result signal;
 - generating a second difference signal representing a difference in the subtraction-result signal;
- 10 generating first different prediction signals for the first difference signal, respectively;
 - generating first prediction-error signals representing differences between the first difference signal and the first different prediction signals, respectively;
- 15 selecting a first minimum prediction-error signal representative of a smallest difference from among the first prediction-error signals;
- generating second different prediction signals for the second difference signal, respectively;
- 20 generating second prediction-error signals representing differences between the second difference signal and the second different prediction signals, respectively;
 - selecting a second minimum prediction-error signal representative of a smallest difference from among the second prediction-error signals; and
 - transmitting the first minimum prediction-error signal and
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the second minimum prediction-error signal to a communication line.

5. An optical recording medium storing formatted information of
5 a first minimum prediction-error signal and a second minimum prediction-error signal which are generated by an audio signal encoding apparatus comprising means for adding a first audio signal and a second audio signal into an addition-result signal; means for subtracting the first audio signal from the second audio signal, and
10 generating a subtraction-result signal; means responsive to the addition-result signal for generating a first difference signal representing a difference in the addition-result signal; means responsive to the subtraction-result signal for generating a second difference signal representing a difference in the subtraction-result
15 signal; a plurality of first predictors having different prediction characteristics respectively and being responsive to the first difference signal for generating first different prediction signals for the first difference signal, respectively; a plurality of first subtracters for generating first prediction-error signals
20 representing differences between the first difference signal and the first different prediction signals, respectively; means for selecting a first minimum prediction-error signal representative of a smallest difference from among the first prediction-error signals; a plurality of second predictors having different prediction characteristics
25 respectively and being responsive to the second difference signal for generating second different prediction signals for the second

difference signal, respectively; a plurality of second subtracters for generating second prediction-error signals representing differences between the second difference signal and the second different prediction signals, respectively; and means for selecting a second minimum prediction-error signal representative of a smallest difference from among the second prediction-error signals.

6. A method of network-based transmission, comprising the steps of:

10 adding a first audio signal and a second audio signal into an addition-result signal;

subtracting the first audio signal from the second audio signal, and generating a subtraction-result signal;

generating a first difference signal representing a difference 15 in the addition-result signal;

generating a second difference signal representing a difference in the subtraction-result signal;

generating first different prediction signals for the first difference signal, respectively;

20 generating first prediction-error signals representing differences between the first difference signal and the first different prediction signals, respectively;

selecting a first minimum prediction-error signal representative of a smallest difference from among the first prediction-error signals;

25 generating second different prediction signals for the second

difference signal, respectively;

generating second prediction-error signals representing differences between the second difference signal and the second different prediction signals, respectively;

5 selecting a second minimum prediction-error signal representative of a smallest difference from among the second prediction-error signals; and

transmitting the first minimum prediction-error signal and the second minimum prediction-error signal to a communication
10 line.

7. An audio signal encoding apparatus comprising:

means for selecting a first audio signal and a second audio signal from among signals composing a multi-channel audio signal;

15 means for adding the first audio signal and the second audio signal into an addition-result signal;

means for subtracting the first audio signal from the second audio signal, and generating a subtraction-result signal;

20 means responsive to the addition-result signal for generating a first difference signal representing a difference in the addition-result signal;

means responsive to the subtraction-result signal for generating a second difference signal representing a difference in the subtraction-result signal;

25 a plurality of first predictors having different prediction characteristics respectively and being responsive to the first

difference signal for generating first different prediction signals for the first difference signal, respectively;

a plurality of first subtracters for generating first prediction-error signals representing differences between the first difference signal and the first different prediction signals, respectively;

means for selecting a first minimum prediction-error signal representative of a smallest difference from among the first prediction-error signals;

a plurality of second predictors having different prediction characteristics respectively and being responsive to the second difference signal for generating second different prediction signals for the second difference signal, respectively;

a plurality of second subtracters for generating second prediction-error signals representing differences between the second difference signal and the second different prediction signals, respectively; and

means for selecting a second minimum prediction-error signal representative of a smallest difference from among the second prediction-error signals.

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8. An audio signal encoding apparatus as recited in claim 7, further comprising means for generating a variable-rate bit stream in response to the first minimum prediction-error signal and the second minimum prediction-error signal.

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9. An audio signal decoding apparatus for processing a first

minimum prediction-error signal and a second minimum prediction-error signal which are generated by an audio signal encoding apparatus comprising means for selecting a first audio signal and a second audio signal from among signals composing a

5 multi-channel audio signal; means for adding the first audio signal and the second audio signal into an addition-result signal; means for subtracting the first audio signal from the second audio signal, and generating a subtraction-result signal; means responsive to the addition-result signal for generating a first difference signal

10 representing a difference in the addition-result signal; means responsive to the subtraction-result signal for generating a second difference signal representing a difference in the subtraction-result signal; a plurality of first predictors having different prediction characteristics respectively and being responsive to the first

15 difference signal for generating first different prediction signals for the first difference signal, respectively; a plurality of first subtracters for generating first prediction-error signals representing differences between the first difference signal and the first different prediction signals, respectively; means for selecting a

20 first minimum prediction-error signal representative of a smallest difference from among the first prediction-error signals; a plurality of second predictors having different prediction characteristics respectively and being responsive to the second difference signal for generating second different prediction signals for the second

25 difference signal, respectively; a plurality of second subtracters for generating second prediction-error signals representing differences

between the second difference signal and the second different prediction signals, respectively; and means for selecting a second minimum prediction-error signal representative of a smallest difference from among the second prediction-error signals; the

5 audio signal decoding apparatus comprising:

means for recovering the addition-result signal from the first minimum prediction-error signal;

means for recovering the subtraction-result signal from the second minimum prediction-error signal; and

10 means for recovering the first audio signal and the second audio signal from the recovered addition-result signal and the recovered subtraction-result signal.

10. A method comprising the steps of:

15 selecting a first audio signal and a second audio signal from among signals composing a multi-channel audio signal;

 adding the first audio signal and the second audio signal into an addition-result signal;

 subtracting the first audio signal from the second audio signal,

20 and generating a subtraction-result signal;

 generating a first difference signal representing a difference in the addition-result signal;

 generating a second difference signal representing a difference in the subtraction-result signal;

25 generating first different prediction signals for the first difference signal, respectively;

generating first prediction-error signals representing differences between the first difference signal and the first different prediction signals, respectively;

selecting a first minimum prediction-error signal
5 representative of a smallest difference from among the first prediction-error signals;

generating second different prediction signals for the second difference signal, respectively;

10 generating second prediction-error signals representing differences between the second difference signal and the second different prediction signals, respectively;

selecting a second minimum prediction-error signal representative of a smallest difference from among the second prediction-error signals; and

15 transmitting the first minimum prediction-error signal and the second minimum prediction-error signal to a communication line.

11. An optical recording medium storing formatted information of
20 a first minimum prediction-error signal and a second minimum prediction-error signal which are generated by an audio signal encoding apparatus comprising means for selecting a first audio signal and a second audio signal from among signals composing a multi-channel audio signal; means for adding the first audio signal and the second audio signal into an addition-result signal; means for subtracting the first audio signal from the second audio signal, and

generating a subtraction-result signal; means responsive to the addition-result signal for generating a first difference signal representing a difference in the addition-result signal; means responsive to the subtraction-result signal for generating a second difference signal representing a difference in the subtraction-result signal; a plurality of first predictors having different prediction characteristics respectively and being responsive to the first difference signal for generating first different prediction signals for the first difference signal, respectively; a plurality of first subtracters for generating first prediction-error signals representing differences between the first difference signal and the first different prediction signals, respectively; means for selecting a first minimum prediction-error signal representative of a smallest difference from among the first prediction-error signals; a plurality of second predictors having different prediction characteristics respectively and being responsive to the second difference signal for generating second different prediction signals for the second difference signal, respectively; a plurality of second subtracters for generating second prediction-error signals representing differences between the second difference signal and the second different prediction signals, respectively; and means for selecting a second minimum prediction-error signal representative of a smallest difference from among the second prediction-error signals.

25 12. A method of network-based transmission, comprising the steps of:

- selecting a first audio signal and a second audio signal from among signals composing a multi-channel audio signal;
- adding the first audio signal and the second audio signal into an addition-result signal;
- 5 subtracting the first audio signal from the second audio signal, and generating a subtraction-result signal;
- generating a first difference signal representing a difference in the addition-result signal;
- generating a second difference signal representing a difference in the subtraction-result signal;
- 10 generating first different prediction signals for the first difference signal, respectively;
- generating first prediction-error signals representing differences between the first difference signal and the first different prediction signals, respectively;
- 15 selecting a first minimum prediction-error signal representative of a smallest difference from among the first prediction-error signals;
- generating second different prediction signals for the second difference signal, respectively;
- 20 generating second prediction-error signals representing differences between the second difference signal and the second different prediction signals, respectively;
- selecting a second minimum prediction-error signal representative of a smallest difference from among the second prediction-error signals; and

transmitting the first minimum prediction-error signal and the second minimum prediction-error signal to a communication line.